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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/062,414	02/05/2002	Ryuichi Hata	111804	4131

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OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

PHAM, LY D

ART UNIT	PAPER NUMBER
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2818

DATE MAILED: 06/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/062,414

Applicant(s)

HATA, RYUICHI

Examiner

Ly D Pham

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 10-12, 14-18, 20 and 21 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 7, 8, 13, 19 and 21-26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. Applicant's response to restriction requirement and Pre-Amendment A has been entered in Office Paper No. 6. Claims 27 and 28 are added as generic linking claims to overcome the restriction requirement. Claims 1 – 28 are now presented for examination.

Priority

2. Initial data show that foreign priority has been claimed on two Japanese document papers, 2000-397268 (12/27/2000) and 2001-031103 (02/07/2001). Nonetheless, the Office has received only the certified copied of document paper 2001-031103, whose priority date is 02/07/2001. If it is to the applicant's knowledge that the application should also have a priority data claimed by document 2000-397268, a certified copy of the paper must be filed as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 10, 11, 27, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Feldmeier et al. (US Pat Pub 2002/0032681 A1).

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Regarding **claims 1, 10, 11, 27, and 28**, Feldmeier et al. disclose a CAM device comprising:

a CAM array including a plurality of CAM words each formed of binary CAM cells (paragraph 0100); and

binary/ternary setting means for making the binary CAM cells being used as binary CAM cells or the binary CAM cells being used as ternary CAM cells when a pair of two bits of the binary CAM is combined (paragraph 0011) and three states of ternary cell "0", "1", and "X" (don't care) are assigned to four states, "00", "01", "10", and "11", expressed by two-bit data stored in the pair (paragraphs 0013 and 0100 – 0104, fig. 19).

Regarding **claim 9**, Feldmeier et al. further disclose a CAM device according to claim 1, wherein when the CAM device is used as a ternary CAM device, conversion process is applied to various types of data (paragraphs 0037, 0038, 0050, 0097).

Regarding **claim 12**, Feldmeier et al. further disclose a CAM device according to claim 11, further comprising a conversion circuit for converting between settings made by the binary/ternary setting means (paragraph 0050 and figs. 15, 16, and 17).

Regarding **claims 14 – 16**, Feldmeier et al. also disclose a CAM device according to claims 11 – 13, wherein binary/ternary setting means is a terminal for inputting an external binary/ternary setting signal (paragraphs 0068 – 0070).

Regarding **claims 17 and 18**, Feldmeier et al. further disclose a CAM device according to claims 11 and 12, wherein the binary/ternary setting means is an internal register for holding a binary/ternary setting signal (paragraph 0100).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier et al. in view of Sherman (US Pat Pub 2003/0093613 A1).

Regarding **claim 20**, although Feldmeier et al. did not clearly teach the feature in which the CAM device further comprises an I/O circuit, it is however shown by Sherman (paragraph 0045). Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to include the feature shown by Sherman to the Feldmeier et al.'s disclosure for control purposes (fig. 1).

7. Claims 2, 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier et al. in view of Abdat (US Pat Pub 2003/0046500 A1).

Regarding **claims 2 and 3**, although Feldmeier et al. did not clearly teach the feature in which each of the pair of the binary CAM cells constituting the ternary CAM cells is included in two different CAM words, and has the same bit number, it is however shown by Abdat (paragraph 0209). Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to combine the feature shown by Abdat to the invention of Feldmeier et al. for comparing operations.

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8. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Feldmeier et al. in view of Kling et al. (US Pat 6,259,620 B1).

Regarding **claim 6**, although Feldmeier et al. did not clearly disclose the feature in which each of the pairs of the binary CAM cells constituting the ternary CAM cells is included in one CAM word, it is however shown by Kling et al. (col. 4, line 63 – col. 5, line 17). Therefore, it is considered obvious to one of ordinary skill in the art, at the time the invention was made, to incorporate the feature shown by Kling et al. to the disclosure of Feldmeier et al. for comparison purposes (col. 5, lines 23 – 32).

Allowable Subject Matter

9. Claims 4, 5, 7, 8, 13, 19, 21 – 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior arts fail to teach or fairly suggest a CAM device configured with binary CAM cells for holding binary data, or ternary data when combining a pair of two-bit binary cells, in which three states of ternary cell "0", "1", and "X" are assigned to four states "00", "01", "10", and "11", expressed by two-bit data stored in the pair, and further including the improvement, wherein during a search operation, a pair of search bit lines used for one binary CAM cell of each of the pairs of the binary AM cells and a pair of search bit lines for the other binary CAM cell are controlled separately.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. When responding to the office action, Applicant(s) are advised to provide the examiner with the page and line numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

13. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned (see MPEP 710.02(b)).

14. Any inquiry concerning this communication on earlier communications from the examiner should be directed to Ly Pham, whose telephone number is 703-305-4862. The examiner can normally be reached on Monday – Friday from 8:30am to 5:00pm, alternate Friday off. The examiner's supervisor, David Nelms, can be reached at 703-308-4910. The fax number for the organization where this application or proceeding is assigned is 703-308-7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Ly Pham

June 17, 2003



HOAI HO
PRIMARY EXAMINER